

New Technologies and Renewable Energy in Central Asia: Opportunities for Growth



 **EURASIAN COUNCIL**
ON FOREIGN AFFAIRS

September 2016

TABLE OF CONTENTS

Introduction	pg. 3
New Technologies in Traditional Sectors: The Example of Agriculture	pg. 4
The Future Is Here: Digital Technology in Central Asia	pg. 8
Exploiting the Region's Alternative Energy Potential	pg. 11
Conclusion: The Changing Investment Climate in Central Asia	pg. 15
About the ECFA	pg. 18

New Technologies and Renewable Energy in Central Asia: Opportunities for Growth

Introduction

Central Asia is today an area rich in growth potential and investment opportunities. In the quarter of a century since independence, and after an initial period of severe economic contraction, the five Central Asian countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan have undergone relatively rapid, if somewhat uneven, economic development and growth. With the exception of Kyrgyzstan, which has vacillated more than the others, they have averaged a real growth rate of 6.5% GDP in the decade between 2002 and 2012, this despite the 2008 world economic crisis¹. Different countries have different priorities and are moving at different rates, but all five are steadily working toward integration, market liberalisation, and the removal of barriers to innovation, trade and investment². Faced with growing populations, increasing urbanisation, soil degradation and inadequate water resources, combined with changing consumption patterns, a strategically weak oil and gas market and economic uncertainty, these states are looking to new technologies and foreign investment to help solve their challenges, maintain continued growth, and ensure that their ongoing development is sustainable. The countries of Central Asia seek to meet those challenges through structural reforms, the introduction of new technologies, and innovation. Kazakhstan, in particular, seems to be taking bolder steps towards a knowledge-based economy and seeking out green growth opportunities.

The collapse of commodity prices (especially oil), along with Russia's economic woes over the past two years, has forced Central Asian countries to increase their emphasis on infrastructure development and private sector investment³. Thus far, most of that investment has come from Europe, the United States, China, Russia and Turkey. This Occasional Paper offers a snapshot of three important sectors in which innovation is growing and which are seeking international partners, financial assistance, and foreign direct investment (FDI). These are agriculture, digital communications, and alternative energy. With its "Future Energy" theme, the upcoming EXPO 2017 exhibition in Astana presents a unique and timely opportunity to attract and connect international investors with Central Asian partners, especially those with shared interests in developing alternative energy sources.

¹ UNCTAD (2014). *Investment Guide to the Silk Road*, p. 9 [Available at] http://unctad.org/en/PublicationsLibrary/diae2014d3_en.pdf

² UNCTAD (2014). *Investment Guide to the Silk Road*, p.3 [Available at] http://unctad.org/en/PublicationsLibrary/diae2014d3_en.pdf

³ J. Dettoni (2016). *EBRD president hopes for Silk Road boost to central Asia*. FDI Intelligence [Available at] <http://www.fdiintelligence.com/Locations/Asia-Pacific/China/EBRD-president-hopes-for-Silk-Road-boost-to-central-Asia>

New Technologies in Traditional Sectors: The Example of Agriculture

There is a strong need and ample room for growth in the agricultural sector across Central Asia. Despite annual urbanisation rates ranging from 0.86% in Kazakhstan to 2.62% in Tajikistan, the Central Asian countries are highly agrarian and agriculture is a key economic sector⁴. The percentage of GDP generated by the sector ranges from just 4.8% in Kazakhstan to 25.7% in Tajikistan. At present, about 46% of Kazakhstan's population, 73% of Tajikistan's, and between 50-65% of the remaining three countries' populations, live in rural areas. Labour force employment in the agricultural sector is about 25% in Kazakhstan and Uzbekistan and twice that in Kyrgyzstan, Turkmenistan and Tajikistan⁵. In many areas of the region, however, agricultural productivity is hindered by poor infrastructure and inadequate technology, making food security a pressing issue. The World Food Program has labelled Tajikistan a "food-poor country" and estimates only about a quarter of its population is food secure, this despite agriculture's prominence in the Tajik economy⁶. In Kyrgyzstan, food insecurity is seasonal with about 12% of the population facing food insecurity and malnourishment, and nutritional deficiencies widespread, especially among children⁷.

Less than 10% of the land in Central Asia is arable and less than 1% is permanently used for crop cultivation⁸. The amount of land used for agricultural purposes varies from county to country, but nearly all of it is pasturage. The most significant crops grown are cotton and wheat. During the Soviet era, cotton cultivation was strongly encouraged and cotton monoculture depleted the soils. Since then cotton production, which is water-intensive, has decreased and wheat production has increased. Wheat requires half as much water to grow as cotton but annual population growth rates as high as 1.71% in Tajikistan, for example, have offset any water savings. The agricultural sector accounts for 87.2% of the water consumed across the arid region. With the exception of Kazakhstan, which has grain-based crop production and grows wheat under rain-fed conditions in the north, 80% of the arable land in Central Asia is irrigated using water drawn from the Amu Darya and Syr Darya basins. Over-irrigation, especially in the cotton-producing areas, has caused significant environmental damage. Not only has it contributed to desiccation of the Aral Sea, where the two rivers once converged, it has caused soil water-logging and increased the salinity of river water downstream⁹. The use of fertilisers, particularly in cotton cultivation, has also led to widespread pollution as contaminated field water mixes with river water.

⁴ See the profile pages for Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan at *The CIA World Factbook* (2016). [Available at] <https://www.cia.gov/library/publications/the-world-factbook/>

⁵ Ibid

⁶ The World Food Programme (2016). *The Republic of Tajikistan: Current issues and what the World Food Programme is doing*. [Available at] <https://www.wfp.org/countries/tajikistan>

⁷ The World Food Programme (2016). *Kyrgyzstan: Current issues and what the World Food Programme is doing*. [Available at] <https://www.wfp.org/countries/kyrgyzstan>

⁸ Compiled from *Arable land(% of land area)* The World Bank [Available at] <http://data.worldbank.org/indicator/AG.LND.ARBL.ZS>

⁹ Special Program for Central Asia (2016). *Enhanced competitiveness, increased trade and economic growth (2016-2020)*, p. 20. [Available here] <http://idbgbf.org/assets/2016/3/7/pdf/8165ddd7-b84c-473c-acdc-9325e0b82a21.pdf>

Central Asia faces major challenges and transformations. In addition to contending with ecological degradation, resource scarcity and urbanisation, if it is to meet its needs it must come to terms with changing consumption patterns and population dynamics, and embrace technological development¹⁰. These interconnected drivers of change affect agricultural productivity and food security in complex ways and offer a variety of entry-points for prospective investors.

Kazakhstan's President Nursultan Nazarbayev seems to understand this best among the Central Asian leaders and is a strong advocate of innovation and technological modernisation, especially in the agricultural sector. With the global population likely to reach 9 billion by 2050, the demand for wheat is set to increase and Kazakhstan must be prepared to export higher volumes of grain to meet it. In an address to the governors of his country's leading grain producing areas, President Nazarbayev argued that "agriculture could be a further driving force for the national economy. Amidst the global crisis, iron ore, our main commodity, is no longer in high demand; however, the global demand for grain is always there"¹¹. In addition to developing organic agriculture as a component of Kazakhstan's "green economy" initiative¹², President Nazarbayev believes that without genetically modified (GM) crops the food needs of the world cannot be met. Kazakhstan, he has said, must "keep up with the pace of time, and along with production of natural food, develop drought-resistant, genetically modified crops"¹³.

In order to meet future expectations and current needs, the Central Asian states must enhance their innovative capacities, which will require significant investment. They must also take full advantage of what agricultural science has to offer. In this respect, Kazakhstan is leading the way. In September 2015, President Nazarbayev called for the creation of a new national research body tasked with developing the country's agriculture. By that point, legislative and land management changes were already underway. Legislation to strengthen regulation of GM activity was introduced in 2014, laying down specific requirements to be met for genetic engineering in the country and creating mechanisms for licensing and registering GM projects, classifying risks, and regulating the export and import of GM products.

Over the past 12 years, gross agricultural output in Kazakhstan has increased four-fold, crop production three-fold and livestock production five-fold but these rates are insufficient, according to the former Minister of Agriculture Assylzhan Mamytbekov¹⁴.

¹⁰ B. Dosov (2016). *The way forward to inclusive agricultural development and innovation in Central Asia*. CGIAR Research Program on Dryland Systems. [Available at] <http://drylandsystems.cgiar.org/content/way-forward-inclusive-agricultural-development-and-innovation-central-asia>

¹¹ TengriNews (2015). *Kazakhstan's President Nazarbayev on GMOs*. [Available at] https://en.tengrinews.kz/politics_sub/Kazakhstan-President-Nazarbayev-on-GMOs-262030/

¹² Food and Agriculture Organisation of the United Nations (2016). *Kazakhstan improves legal framework for organic agriculture*. FAO Regional Office for Europe and Central Asia [Available at] <http://www.fao.org/europe/news/detail-news/en/c/358318/>

¹³ D. Urazova (2014). *Agro-technologies given thumbs up in Kazakhstan*. TengriNews [Available at] https://en.tengrinews.kz/politics_sub/Agro-technologies-given-thumbs-up-in-Kazakhstan-254752/

¹⁴ R. Alibekova (2013). *Master plans for Agribusiness 2020 programme developed*. The Astana Times [Available

He blames the lack of even greater growth on low investment in the sector, which has resulted in inadequate technological modernisation, low-intensity farming and low productivity. Kazakhstan is now taking steps to remedy this by bolstering the agricultural sector and trying to attract foreign investors in agribusiness through a series of tax reforms, increased subsidies, increased lending, and changes in land-management¹⁵. At 12%, VAT in Kazakhstan is lower than in Russia and the other CIS countries. Moreover, companies that process agricultural products now pay 70% less in taxes than other companies and both foreign and domestic farmers enjoy a 70% reduction in most taxes. Under the Agribusiness-2020 programme, agricultural subsidies are slated to increase 4.5-fold by 2020. Agricultural lending is also available, and foreigners and companies with majority foreign ownership are able to receive agricultural land for ten years. (In mid-2016, after a series of land reform related demonstrations, the Kazakh President had to shelve plans for further changes in this sphere, including the extension of leasing terms for foreigners from 10 to 25 years.)

In 2015 alone, the EBRD invested more than €120 million in agribusiness in Kazakhstan, investment it said was made possible by the country's ongoing programme of reforms¹⁶. This model of reform-linked investment now underpins the EBRD's approach to investment across the region.

Although often less well developed and reform-based, similar programmes exist in other Central Asian countries. For example, Uzbekistan's Welfare Improvement Strategy for 2012 - 2015 and Integrated Rural Development programme launched in 2009 each contain provisions that promote sustainable growth in the agricultural sector and improved food security¹⁷. Those efforts were supported by the Asian Development Bank's (ADB) Water Operation Plan 2011 - 2020, which oversees projects that seek to address water scarcity by improving service delivery and water productivity.

If Central Asia is to achieve food security and meet its nutrition goals, cooperation amongst national and international partners must be strengthened. Although there is much scope for improvement, the region has long been open to such initiatives. In September 2015, for example, Kazakhstan's Ministry of Agriculture launched a dry land management project that was co-funded by the United Nations Development Programme (UNDP) and the Global Environment Facility¹⁸. It includes pilot projects focused on pasture management in northern Kazakhstan, cattle breeding in the east, and fruit and vegetable growing in Almaty Oblast. Since 1998, the International Centre for

at] <http://astanatimes.com/2013/08/master-plans-for-agribusiness-2020-programme-developed/>

¹⁵ World Food Kazakhstan (2015). *Investors are welcome to agriculture*. [Available at]

<http://www.worldfood.kz/en/press-centre/news/222-investors-are-welcome-to-agriculture>

¹⁶ S. Chakrabarti (2016). *EBRD's vision for Astana International Financial Centre*. The Astana Times [Available here]

<http://astanatimes.com/2016/05/ebdcs-vision-for-astana-international-financial-centre/>

¹⁷ Asian Development Bank (n.d.). *Sector assessment (summary): agriculture and natural resources (irrigation, drainage and flood protection)*. Country Partnership Strategy: Uzbekistan 2012-2016, p. 3 [Available at]

<http://www.adb.org/sites/default/files/linked-documents/cps-uzb-2012-2016-ssa-03.pdf>

¹⁸ Z. Zharmagambetova (2015). *Kazakhstan Agricultural Update*. USDA Foreign Agricultural Service. [Available at]

http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Kazakhstan%20Agricultural%20Update_Astana_Kazakhstan%20-%20Republic%20of_10-6-2015.pdf

Agricultural Research in the Dry Areas (ICARDA) has been working closely with regional partners¹⁹. It prioritises capacity-building, improved agricultural production, resource conservation, public policy research, and genetic resources development.

Regional governments also work with the United Nations' Food and Agriculture Organisation (FAO) to raise ecological awareness and foster a better understanding of the causes of agricultural land degradation. Some countries have begun to incorporate elements of no-till Conservation Agriculture (CA) into their agricultural programmes in an effort to achieve more sustainable agricultural land management and rehabilitate their already badly degraded agricultural lands. By limiting the use of agricultural chemicals and mechanical tilling, CA enables producers to sustainably increase production and maintain ecosystem functions while improving soil health. Nonetheless, its promise as a land-use option is as yet poorly understood²⁰. Of the five Central Asia countries, Kazakhstan and Uzbekistan are the most proactive supporters of CA. Some elements of CA were also incorporated in past donor-funded projects in Tajikistan and Uzbekistan but with relatively limited impact, either in terms of the area covered or the number of beneficiary households.

Another UN agency that operates in Central Asia is the International Fund for Agricultural Development (IFAD). IFAD believes that agricultural development is key to reducing poverty and increasing food security. It provides developing countries with low-interest loans and grants earmarked for innovative agricultural and rural development programmes and projects that will improve the lives of smallholder farmers, particularly those in the livestock sector²¹. At present, IFAD is supporting projects in Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan. Since 1995, it has invested more than USD 72.4 million in loans for agricultural development projects that have reached more than half a million households in Kyrgyzstan. In Tajikistan, it has invested more than USD 26.9 million since 2008 in programmes that have improved the nutritional and economic well-being of more than 41,000 households. And in 2011 IFAD began investing in Uzbekistan with loans and grants aimed at promoting modern agricultural practices that will benefit 12,000 households. Such projects help build institutional capacity and rural infrastructure. They also enhance productivity, promote modernisation, improve access to domestic and international markets, and reduce unemployment in rural areas²².

Important collaborations are also occurring in agricultural science. For instance, in January 2015 the Central Asia research group at the Department of Remote Sensing in Würzburg, Germany, launched a two-year Volkswagen Foundation-funded research project in collaboration with partners from the Uzbekistan-based Scientific Information Centre of the Interstate Commission on Water Coordination in Central Asia and AI'

¹⁹ ICARDA (n.d). *Central Asia and the Caucasus Regional Program*. [Available at] <http://www.icarda.org/central-asia-and-caucasus-regional-program>

²⁰ FAO (2013). *Conservation Agriculture in Central Asia: Status, Policy, Institutional Support and Strategic Framework for its Promotion*, p. 32 [Available at] <http://www.fao.org/3/a-i3275e.pdf>

²¹ IFAD (2014). *Investing in the future: Agricultural development and rural poverty reduction in Europe and Central Asia* [Available at] <https://www.ifad.org/documents/10180/936c3b14-2054-48fe-a7da-c6b2c735abed>

²² Ibid.

Farabi Kazakh National University in Almaty, Kazakhstan. Their objective is to gain a better understanding of the causes of land degradation and changes in land productivity by analysing socio-economic and ecological indicators in “hotspots of decreasing land production”. They intend to share their insights with politicians and decision-makers in order to help them in their efforts to increase food security and address environmental degradation²³.

From these few examples, it is evident that if regional research organisations and decision-makers join forces with local and international partners, they can set a robust agricultural research and innovation agenda capable of addressing food and nutrition security, improving agricultural livelihoods, and ensuring environmental sustainability by concretely addressing land and resource degradation.

The Future Is Here: Digital Technology in Central Asia

Among Central Asian nations, Kazakhstan is a clear leader in demonstrating aspirations to develop a knowledge-based economy.

The World Bank has identified four requisites for achieving that objective: (1) a well-educated, highly skilled labour force, (2) a dynamic information infrastructure, (3) institutional structures that incentivise entrepreneurship, investment, and the free-flow of knowledge, and (4) an innovation system geared to tapping global knowledge and using it to address local needs and generate new knowledge²⁴. *Strategy Kazakhstan 2050*²⁵, a wide-ranging programme of economic, political and social reforms, provides a framework within which to satisfy these requisites while more specific initiatives address individual elements.

In his 2014 State of the Nation address, President Nazarbayev emphasised the need to strengthen innovation and implement key OECD principles if Kazakhstan is to achieve its twin objectives of sustained economic development and becoming one of the world’s 30 most developed countries by 2050²⁶. But such aspirations cannot be realised without modern information and communication technologies, which has been a focal point of the country’s development strategy for more than a decade now. Since 2006, the percentage of internet users in Kazakhstan has risen from 8.3% to 68.1%, and in 2014 the country ranked 28th on the UN e-Government Survey²⁷. Kazakhstan’s

²³ F. Loew (2015). *Assessing Land Value Changes and Developing a Discussion-Support-Tool for Improved Land Use Planning in the Irrigated Lowlands of Central Asia (LaVaCCA)*. Remote Sensing Department at University of Wuerzburg [Available at] <http://remote-sensing.eu/new-project-on-agricultural-production-in-central-asia/>

²⁴ The World Bank (2013). *Knowledge Economy*. [Available at] <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/EXTECAREGTOPKNOECO/0,,contentMDK:20422383~menuPK:921081~pagePK:34004173~piPK:34003707~theSitePK:677607,00.html>

²⁵ Republic of Kazakhstan (2012). *Kazakhstan Strategy 2050*. [Available at] <http://kazakhstan2050.com/>

²⁶ The Astana Times (2014). *Knowledge-Based Economy Essential to Kazakhstan’s Economic Development*. [Available at] <http://astanatimes.com/2014/08/knowledge-based-economy-essential-kazakhstans-economic-development/>

²⁷ The World Bank (2016). *Reaping the benefits of digital technology in Central Asia*. [Available at] <http://www.worldbank.org/en/news/feature/2016/03/15/reaping-the-benefits-of-digital-technology-in-central-asia>

telecommunications sector, which is the most developed in the region, supported more than 9 million internet and more than 30 million mobile phone users in 2015²⁸. At that time, the country had 10 internet providers, including Kazakhtelecom JSC. The sector's obviously robust performance has encouraged many entrepreneurs to invest in designing mobile applications, including a range of messaging apps and online ticket booking services²⁹. *Digital Kazakhstan 2020*³⁰, scheduled for approval by the end of 2016, builds on this progress. It aims to boost the economy by creating a digital platform that will leverage its competitiveness. Under this new programme, the Digital Silk Road will deliver the internet to rural areas, economic sectors ranging from health and education to transportation and agriculture will undergo digital conversion, and ICT specialists with skills and competencies appropriate to the new digital economy will be trained.

Other programmes and initiatives to promote the IT sector, liberalise telecommunications, and diversify the economy are also in place. For instance, between 2010 and 2014, the National Agency for Technological Development supported around 600 startups with grants and loans valued at USD 47 million. As a result of this and other interventions, the technology sector is on the rise and vibrant ICT startups are emerging, with Almaty quickly becoming an innovation hub³¹. Already businesses set up by young entrepreneurs have gained international visibility. In 2015, the startup conference Echelon Asia Summit name one of them, EcoSocket – developer of a mobile device and app that enables users to remotely control the smart devices in their homes – as one of the ten best startups³². And in November of that year, Astana hosted 45 top innovation and venture capital investment experts who had been specially invited to address founders of the 150 best startups, an equal number of investors, and another 1,500 visitors at TechConnectTech, Central Asia's largest-ever international tech conference³³. It is thus evident that Kazakhstan grasps the importance of ICT and its role in developing a knowledge-based economy and making the country more competitive.

Other Central Asian countries have also turned their attention to ICT³⁴. Kyrgyzstan, for example, is developing *Digital Kyrgyzstan 2020 - 2025*, which mirrors Kazakhstan's initiative. The Kyrgyz government has made increasing digital literacy a priority and created a portal for e-services, including key municipal services. Digital transformation is also a priority for Tajikistan. It hopes to use ICT as a catalyst for sustainable

²⁸ S. Brletich (2015). Can Kazakhstan's Silicon Valley Effort Succeed? The Diplomat [Available at] <http://thediplomat.com/2015/06/can-kazakhstan-silicon-valley-effort-succeed/>

²⁹ A. Rysaliev (2016). *Central Asian Visions of IT Boom Look Distant*. [Available at] <http://www.eurasianet.org/node/79226>

³⁰ K. Massimov (2016). The first five-year of Digital Kazakhstan-2020 starts in 2017. [Available at] <http://pm.kz/en/news/5/v-2017-godu-startuet-pervaja-pjatiletka-programmy-«tsifrovoj-kazahstan-2020»>

³¹ D. Young (2015). *Almaty eyes the future as an innovation and start-up hub*. WIT [Available at] <http://www.webintravel.com/almaty-eyes-the-future-as-an-innovation-and-start-up-hub/>

³² KazSocial (2015). Kazakhstan's EcoSocket is among top 10 tech start-ups at Echelon Asia Summit [Available at] <http://kazzsocial.com/?p=1678>

³³ See *Масштабная технологическая конференция TechConnect.Tech Astana* (2015). [Available at] <https://dou.ua/calendar/8514/>

³⁴ The World Bank (2016). *Reaping the benefits*.

development, as outlined in its *National Development Strategy 2030*. Uzbekistan, too, is investing in digital technologies and working to increase digital literacy among its populace. Since 2012, it has launched two programmes aimed at advancing the country's digital development: the *ICT Infrastructure Development Program 2015 - 2019* and the *E-Government Development Program 2013 - 2020*. Under the e-government programme at least 265 online services have been initiated thus far, transparency in public service delivery has been improved, and "One-Stop-Shops" have been established in 194 of the country's districts. Just last year Uzbekistan activated its Open Data Portal, which provides access to more than 700 data sets by 63 data providers covering 15 subject areas³⁵.

But in order to implement such innovative strategies, these countries must invest in human capital through high calibre educational programmes. Kazakhstan is again leading the way. In recent years, it has invested heavily in educational projects such as the Bolashak International Scholarship programme,³⁶ which since 1993 has provided funding for more than 6,500 talented students to study at foreign universities, some of them the best in the world. In exchange, the students are expected to return to work in Kazakhstan for at least five years after completing their studies, and most have done so permanently. The country has also taken steps to strengthen its own educational infrastructure and, as a result, now has a network of innovative public schools – called Nazarbayev Intellectual Schools³⁷ – that provide gifted adolescents with the educational resources they need to eventually advance to the highest levels of their chosen fields. It also has 146 higher education institutions that together produce thousands of engineers, mathematicians and IT specialists each year³⁸. Eight of the degree-granting universities were featured on the 2013/14 QS World University Ranking³⁹.

The Central Asian countries must also take steps to attract more foreign direct investment (FDI). In Kazakhstan, science and technology parks, the incubators of new ideas and innovation, are opening not just in Astana but across the country. Since its founding in 2005, the Park of Information Technologies in the village of Alatau near Almaty has earned the nicknamed "Silicon Alatau" due to its focus on ICT⁴⁰. The facilities at Kurchatov, where the Soviet Union once secretly carried out its nuclear weapons programme, now house the Nuclear Technology Park. Dubbed Kazakhstan's "Science City", this park was created in 2005 to bring together private investment and cutting edge scientific research to develop profitable businesses⁴¹. In this it has been

³⁵ Ibid.

³⁶ Embassy of the Republic of Kazakhstan (n.d.). *Bolashak scholarship*. [Available at] <http://www.kazakhembus.com/content/bolashak-scholarship>

³⁷ Nazarbayev Intellectual Schools (2013). *Autonomous education organization "Nazarbayev Intellectual Schools" 2020 development strategy*. [Available at] <http://nis.edu.kz/en/about/str-doc/>

³⁸ EAECA (2102). *Higher Education in Kazakhstan*. European Commission, p. 4. [Available at] http://eacea.ec.europa.eu/tempus/participating_countries/overview/Kazakhstan.pdf

³⁹ QS Top Universities (n.d.). *Study in Kazakhstan*. [Available at] <http://www.topuniversities.com/where-to-study/asia/kazakhstan/guide>

⁴⁰ D. Shalgimbayeva (2014). *National science and technology parks of Kazakhstan*. Kazakh TV [Available at] http://kazakh-tv.kz/en/view/column/page_70323_national-science-and-technology-parks-of-kazakhstan

⁴¹ Y. Uat Khanov (2015). *Former Secret Town Once More Attracting Scientists*. Astana Times. [Available at] <http://astanatimes.com/2015/10/former-secret-town-has-highest-number-of-scientists-per-square-kilometre/>

very successful: within its first five years, the centre attracted funding for joint ventures from sources in Germany, South Korea, Russia and Ukraine, launched six new companies, and hosted representatives from forty countries at a major trade show⁴². There are other examples of such facilities, including three to be opened by the end 2016. One of these, FinTech, is a centre for financial technologies established jointly with IBM⁴³.

Kazakhstan has also established ten Special Economic Zones (SEZs) that have special laws and regulations favourable to business, and are thus aimed at furthering economic development by attracting FDI and encouraging collaboration and technological innovation. This includes the IT-focused Innovation Technologies Park in Almaty, which will remain in force until at least 2028⁴⁴. Substantial investment by large international firms is also being attracted through such ambitious projects as the Astana Business Campus⁴⁵, an intellectual innovation cluster that will prioritise the “knowledge economy” over the energy sector. It is expected to host more than 90 companies when completed, and already IT giants General Electric, Samsung, Intel, Hewlett-Packard, Huawei and Microsoft have announced their intent to join. The organisers of the Almaty Business Campus have high expectations and there is no reason why they should not be met: countries and multinational companies are already finding ample investment opportunities in Kazakhstan, the richest and most business-friendly country in Central Asia.

Kazakhstan is not the only country in the region to demarcate special zones with laws and regulations favourable to FDI. The other four Central Asian states have established free economic zones (FEZ), where goods are traded duty free and companies enjoy other tax exemptions and preferential treatment⁴⁶. Kyrgyzstan has four FEZs. Uzbekistan has a mechanism in place for establishing such zones but only has one operational FEZ at present and another in the planning stages. Tajikistan currently has two FEZs, one of which has already attracted FDI for solar panel manufacturing, and two more are being developed. Turkmenistan has ten, all of which give preferential treatment to advanced technology enterprises. While few of these have, as yet, attracted FDI specifically earmarked for the ICT sector, the potential to do so is clearly present.

Exploiting the Region’s Alternative Energy Potential

Some of the Central Asian states are also investing in alternative energy. From June to

⁴² W.D. Gardner (2010). *Former Soviet state incubating high-tech businesses at former nuclear weapons site*. Scientific American [Available at] <http://www.scientificamerican.com/article/kazakhstan-nuclear-technology/>

⁴³ Kazinform (2016). *Kazakhstan will open center for financial technologies in 2016 - A. Issekeshv* [Available at] <http://kazinform.kz/eng/article/2908155>

⁴⁴ KAZNEX Invest (n.d.). *Special economic zones in Kazakhstan*. [Available at] http://www.kaznexinvest.kz/en/SEZ/economic_zones.php

⁴⁵ S. Brletich (2015). *Can Kazakhstan’s Silicon Valley Effort Succeed?* [Available at] <http://thediplomat.com/2015/06/can-kazakhstans-silicon-valley-effort-succeed/>

⁴⁶ UNCTAD, p. 17.

September 2017 Kazakhstan will host EXPO 2017 in Astana⁴⁷. Its theme, “Future Energy”, and stylised wind turbine logo reflect the country’s commitment to sustainable development and renewable energy. This can be seen in the construction of the site itself, which unlike previous EXPOs features permanent buildings powered by energy harnessed directly from the sun and wind. After EXPO 2017 closes, the site will become a sustainable international office and research park committed to the development of green technologies and investment projects. It will also be home to the new Astana International Financial Centre, a clear indication of the investment opportunities green growth and alternative energy development offer. The EXPO itself is a case in point: the government has allocated USD 325 million for construction of the site but expects to attract USD 1.3 billion in foreign investment for related infrastructure projects, all of which have been planned with sustainability in mind⁴⁸. In addition to showcasing Kazakhstan’s progress and potential in the areas of sustainable development and green energy, the EXPO will provide a platform for discussion and development of energy-related proposals⁴⁹. Its planners hope that it will help shift the perception of Kazakhstan away from energy-producer to energy-innovator willing to take necessary risks to ensure a cleaner, more sustainable future.

EXPO 2017’s thematic structure reflects the country’s priorities with regard to future energy. That overarching theme is broken down into three sub-themes: *Reducing CO₂ Emissions*, *Living Energy-Efficiency*, and *Energy for All*⁵⁰. *Reducing CO₂ Emissions* focuses attention on carbon capture and storage, renewable energy sources, hydrogen as an energy source, and thermonuclear fusion. *Living Energy-Efficiency* considers energy efficiency, buildings and urban planning, energy efficient transport, and energy efficient industry. *Energy for All* looks at energy against poverty, access to sustainable energy, and decentralised energy systems. These are priority areas for Kazakhstan’s economic development as a whole and are in line with the Paris Agreement of December 12, 2015 that set as a long term goal keeping the average global temperature to less than 2°C above pre-industrial levels. They also reflect the range of issues encompassed by the concept of “green growth”.

Green growth, according to the OECD, entails “fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies⁵¹.” Although strategies for green growth must be tailored to the particular circumstances of a country, green policies can enhance productivity by incentivising innovation and the efficient use of resources and by reducing consumption and waste. They can also boost investor confidence, reduce

⁴⁷ Invest in Kazakhstan (2015). “EXPO 2017: Showcasing Kazakhstan”, pp. 35-37. [Available at] http://kazakhstan.newsdeskmedia.com/Images/Upload/Kazakhstan_2015/PDFs/Expo_2017.pdf

⁴⁸ G. White (2015). *Kazakhstan welcomes the world to EXPO 2017*. TransAtlantic Magazine [Available at] <http://transatlantic-magazine.com/kazakhstan-welcomes-the-world-to-expo-2017/>

⁴⁹ A. Yessimov (2016). *Successfully hosting EXPO 2017 is very important for Kazakhstan*. The Astana Times [Available at] <http://astanatimes.com/2016/02/expo-2017-isvmfk/>

⁵⁰ Republic of Kazakhstan (2016). *Astana Expo 2017 Participation Guide, 2nd Edition*, p. 14. [Available at] <http://www.kazembassy.cz/kz/files/download/829>

⁵¹ OECD (n.d.). *What is green growth and how can it help deliver sustainable development?* [Available at] <http://www.oecd.org/greengrowth/whatisgreengrowthandhowcanithelpdeliversustainabledevelopment.htm>

negative shocks to growth due to environmental impacts, stimulate demand for green goods, technology, and services, and alleviate poverty⁵². As this would suggest, there is ample scope for green growth across Central Asia. With this in mind, Kazakhstan has spearheaded a multilateral Green Bridge Partnership Programme to facilitate green investment, the sharing of new technologies and innovations, and green job creation⁵³. And in May 2016 the Association of Renewable Energy of Kazakhstan in conjunction with the European Union hosted the first Summit on Renewable Energy in Astana⁵⁴.

Development of renewable energy sources is a key component of Kazakhstan's strategy for green growth. Kazakhstan intends to maintain its prominent role in the hydrocarbons market but recognises that it must invest in alternative energy, if it is to meet its future needs. To that end, it is introducing technologies that use solar and wind power, and has set as a goal that half of its energy needs will be met using energy from renewable sources by 2050⁵⁵. With 80% of its electricity currently generated by coal, that is an ambitious goal, but the vision and commitment are there to achieve it. In fact, according to Kazinform news agency, US Ambassador to Kazakhstan George Krol recently described President Nazarbayev as the "most ambitious politician of the world searching for renewable energy sources⁵⁶." In 2003, just a dozen years after Kazakhstan gained independence from the Soviet Union, a government decree prioritised development of wind energy. Legislation passed in 2009 eliminated legal and financial barriers to renewable energy development⁵⁷, and a 2013 renewable energy law implemented policy reforms that paved the way for EBRD financial support for such projects⁵⁸. Moreover, the steppes of Kazakhstan are particularly well-suited to the development of solar and wind power. The UNDP estimates that by 2030 wind power alone could exceed the current power generating capacity of the country by more than ten fold⁵⁹.

Progress is already being made. In the first three months of 2016, more than 186 million kilowatt hours of electricity were generated by renewable sources, compared to just over 82 million kilowatt hours during the same period in 2015, an increase of 227% in

⁵² Ibid.

⁵³ Kazakhstan Green Bridge Initiative Conference (2016). *Critical element of the Green Bridge initiative: Advanced fossil fuel technologies*. [Available at] https://www.unece.org/fileadmin/DAM/energy/se/pdfs/clep/ws_Astana_09.03.2016/ws_Astana_Agenda.pdf

⁵⁴ J. Watson (2016). *Kazakhstan: Opportunity for our members*. SolarPower Europe [Available at] <http://www.solarpowereurope.org/newsletter-may-2016/our-news/kazakhstan-opportunity-for-our-members/>

⁵⁵ Kazakhstan Strategy 2050 (n.d.). *Energy*. [Available at] <http://kazakhstan2050.com/energy/>

⁵⁶ Kazinform (2016). G. Krol: N. Nazarbayev is the most ambitious politician searching for renewable energy sources. [Available at] <http://www.inform.kz/eng/article/2907271>

⁵⁷ M. Nachmany et al (2015). *Climate change legislation in Kazakhstan: An excerpt from the 2015 Global Climate Change Legislation Study*. [Available at] <http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/05/KAZAKHSTAN.pdf>

⁵⁸ S. Pyrkalo (2016). *Pioneering renewable energy*. EBRD [Available at] <http://www.ebrd.com/news/2016/pioneering-renewable-energy.html>

⁵⁹ K. Nabiyeva (2015). *Renewable energy and energy engagement in Central Asia: Prospects for German engagement*. Michael Succow Foundation for the Protection of Nature, p. 6 [Available at] http://succow-stiftung.de/tl_files/pdfs_downloads/MDF_Working_Paper/MDF_Paper_RE_and_EE_in_Central_Asia_Kominla_Nabiyeva_2015.pdf

just one year⁶⁰. Most of that came from small hydropower plants and wind farms. But that is just a start. In 2015, the EBRD financed the country's first commercial-scale solar park and joined with the Clean Technology Fund to finance Burnoye Solar, a joint Kazakh-British project that will be the country's first privately owned renewable energy generator⁶¹. Work is also scheduled to begin in 2017 on what will be the largest solar power plant in Central Asia and on an adjacent biomass-fuelled plant, a €150 million project developed by the Kazakh-Dutch-German company KB Enterprises in cooperation with Siemens⁶². KazEurope, a Spanish-Kazakh company that offers support to investors in the renewable energy sector, reports that as of early 2016, Kazakhstan's Ministry of Energy had granted approval for 34 wind power projects, 41 hydropower projects, 28 solar power plants, and 3 biomass projects⁶³. By the end of 2020, Kazakhstan plans to have commissioned 106 renewable energy-generating facilities with a total capacity of more than 3054 megawatts⁶⁴. Currently, the country meets less than 1% of its energy needs from solar, wind, biomass and small hydropower projects but expects that to rise to 3% in 2020 and 11% by 2030⁶⁵. Meanwhile, it is developing nuclear power and taking steps to reduce energy consumption and decrease carbon emissions.

The prospects for renewable energy growth are positive in all the Central Asian states, with the exception of Turkmenistan that faces specific challenges. All have passed legislation to promote energy efficiency and the exploitation of alternative energy sources. Which energy sources have the greatest potential varies from country to country. In Kazakhstan it is wind and solar, in Uzbekistan it is biogas and solar, in Turkmenistan it is solar, in Tajikistan it is hydropower and solar, and in Kyrgyzstan it is hydropower. Notwithstanding the potential, the amount of energy generated from renewable sources remains low. Excluding that generated by major hydroelectric projects, which are not considered renewable sources, it currently ranges from less than 1% in Kazakhstan and Turkmenistan to about 3% in Uzbekistan and Tajikistan⁶⁶.

Barriers to investment remain, some of them significant, but progress is evident across the region. In 2013, the late Uzbek President Islam Karimov issued a decree on alternate energy usage that emphasised solar energy⁶⁷. His country has also implemented measures to encourage investment in the renewable energy sector, and with some

⁶⁰ F. Babayeva (2016). *Kazakhstan sees rise in capacity of renewable facilities*. Azernews [Available at] <http://www.azernews.az/region/98061.html>

⁶¹ S. Pyrkalo (2015). *First large-scale solar plant in Kazakhstan receives EBRD backing*. EBRD [Available at] <http://www.ebrd.com/news/2015/first-largescale-solar-plant-in-kazakhstan-receives-ebrd-backing.html>

⁶² D. Lee (2016). *Construction launches in Akmola region on Central Asia's largest solar power plant*. The Astana Times [Available at] <http://astanatimes.com/2016/05/construction-launches-in-akmola-region-on-central-asias-largest-solar-power-plant/>

⁶³ KazEurope (2016). *Renewable energy opportunities in Kazakhstan*, p. 7. [Available at] http://kazeurope.com/wp-content/uploads/2016/04/Renewable_Energy_Opportunities_in_Kazakhstan.pdf

⁶⁴ E. Kosolapova (2015). *Kazakhstan to launch over 100 renewable energy facilities by 2020*. Trend [Available at] <http://en.trend.az/business/economy/2458640.html>

⁶⁵ M. Karatayev and M. Clarke (2014). *Current energy resources in Kazakhstan and the future potential of renewables: A review*. Energy Procedia, p. 98 [Available at] <http://www.sciencedirect.com/science/article/pii/S1876610214017214>

⁶⁶ K. Nabiyeva (2015), pp. 3-4.

⁶⁷ *Ibid.*, p. 7.

success. Having secured a USD 110 million loan from the Asian Development Bank (ADB), Uzbekistan is building the first on-grid photovoltaic power park in the region. Foreign investment is occurring elsewhere, too. The ADB and Russia, for example, are supporting small hydropower projects in Kyrgyzstan and Tajikistan. It is worth noting that Tajikistan ranks among the ten countries with the greatest hydropower potential in the world but is at present using only about 5% of its small hydropower potential. Nonetheless, it does plan to build 190 small hydropower plants and has policies in place to promote the development of renewable energy resources through tax breaks and feed-in tariffs. For its part, Kyrgyzstan is tapping only about 3% of its hydropower potential⁶⁸. Turkmenistan does not currently generate power from renewable energy sources, and at the current time its government shows little interest in doing so. The only noteworthy efforts to promote renewable energy there are those made by the Turkmen Solar Scientific Research Institute, which has launched two solar projects using UN funds.

Several financial institutions support renewable energy and energy efficiency improvement projects in Central Asia. Foremost among them at present are the ADB, the EBRD, the Eurasian Development Bank (EDB), the International Finance Corporation (IFC), the World Bank, and the Global Environment Facility (GEF). In-country offices of the UNDP, the *Gesellschaft für Internationale Zusammenarbeit* (GIZ), and the Regional Environmental Centre for Central Asia (CAREC) as well as local NGOs often serve as implementing agencies for these international donors⁶⁹. In addition, as part of its INOGATE Programme – which seeks to foster energy cooperation between the EU and Central Asia and six other Caucasus and Eastern European countries – the EU has funded a major three-year project on renewable energy and energy efficiency. Its objective is to help the governments of these countries create the policy, regulatory and institutional mechanisms necessary to facilitate incorporation of renewable energy into the energy mix of their respective countries and increase energy efficiency⁷⁰. Some European countries have developed specific relationships with Central Asian countries. Germany, for example, is a “bilateral development cooperation partner” with Uzbekistan, Tajikistan and Kyrgyzstan; Kazakhstan and Turkmenistan are excluded from this arrangement due to their relatively high average income levels⁷¹.

Conclusion: The Changing Investment Climate in Central Asia

The EBRD, which plays a leading role in private sector development and is the largest green investor in the region, invested a record €1.4 billion in Central Asia in 2015 alone, which brings its total investment there since the early 1990s to €10 billion⁷².

⁶⁸ Ibid., pp. 1-2.

⁶⁹ K. Nabiyeva, p. 10.

⁷⁰ CASEP (2013-2016). *Sustainable energy programme for Central Asia: Renewable energy sources –energy efficiency*. European Union [Available at] http://www.inogate.org/documents/2_Paul_Moulin_CASEP_ENGLISH.pdf

⁷¹ K. Nabiyeva, p. 11.

⁷² S. Pyrkalo (2016). *EBRD investment in Central Asia reaches record €1.4 billion in 2015*. [Available at]

When addressing the FT-EBRD Central Asia Investment Forum at its meeting in Istanbul earlier this year, EBRD President Sir Suma Chakrabarti admitted that the “region can be challenging, with lack of access to financing and unstable electricity supply among the chief obstacles to doing business. But it is also full of great promise. Central Asia’s massive investment needs can be turned into big opportunities.”

The investment climate is steadily improving across the region, and institutional and private investors are finding increasing investment opportunities in the agriculture, ICT, and alternative energy sectors as well as in other priority areas. The UN Conference on Trade and Development (UNCTAD) reports that from 2002 to 2012, FDI flows into the Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan rose from USD 2 billion a year to USD 19 billion across all sectors⁷³. In their experience, “international investors are attracted [to the region] by economic growth, improved productivity and the availability of exceptional resources, including a skilled labour force. The enactment of laws and regulations protecting foreign investment also provides investors with a more secure investment environment⁷⁴.” Privatisation and economic liberalisation undertaken in Kazakhstan, Kyrgyzstan, and Tajikistan as part of their WTO accession processes has created additional opportunities for investors⁷⁵.

In 2013, the World Bank named the Silk Road countries, which includes Central Asia, as the most improved region in the world in terms of ease of doing business. Since then, the four Central Asian countries included in the ranking (Turkmenistan was not ranked) have continued to improve. Kazakhstan ranks 41st on the World Bank Group’s 2015 *Ease of Doing Business* ranking, Kyrgyzstan 67th, Uzbekistan 87th, and Tajikistan 132nd. This is a considerable climb from 2013, when Kazakhstan ranked 77th, Kyrgyzstan 102nd, Uzbekistan 141st, and Tajikistan 166th⁷⁶.

Although fewer and fewer all the time, barriers to investment and gaps in legislation and its interpretation remain. Serious steps are being taken to remove them and bring investment-related law in line with changing conditions and investment priorities. UNCTAD finds progress in this regard to be most evident in the procedures for starting new businesses and registering property as well as in investor protection, contract implementation, and corporate governance standards⁷⁷.

Today, the Central Asian states are actively seeking FDI in priority sectors and have

<http://www.ebrd.com/news/2016/ebrd-investment-in-central-asia-reaches-record-14-billion-in-2015.html> Also, L. Holscher (2016). *Green development and investment in Central Asia*. EBRD [Available at <http://www.ebrd.com/news/2016/green-development-and-investment-in-central-asia.html>] NB: in EBRD usage, Central Asia includes Mongolia.

⁷³ UNCTAD (2014). *Investment guide to the Silk Road*. United Nations, p. 13 [Available at http://unctad.org/en/PublicationsLibrary/diae2014d3_en.pdf]

⁷⁴ Ibid., p. x.

⁷⁵ Ibid., p. 14.

⁷⁶ European Commission (2015). *Central Asia invest: Boosting small business competitiveness*. European Union [Available at https://ec.europa.eu/europeaid/sites/devco/files/brochure-central-asia-invest-2015_en.pdf] and World Bank Group (2016). *Doing business: Measuring business regulations*. [Available at <http://www.doingbusiness.org/rankings>]

⁷⁷ UNCTAD, p.14.

implemented policy changes to encourage diversification. Several have investment promotion agencies (IPAs) in place to facilitate that process and provide support to potential investors. Kaznex Invest, Kazakhstan's national IPA, provides support to foreign investors while the Foreign Investors' Council under the President of Kazakhstan has created an advisory council to address foreign investment related issues and improve the investment climate. Investors in priority areas qualify for tax concessions and other preferential treatment under a 2003 decree. Agriculture, ICT, and alternative energy are all considered priority areas⁷⁸. Kyrgyzstan has no IPA, but with the exception of natural resource extraction, its investment policy is relatively open. Tajikistan created a State Committee on Investments and State Property in 2006. That body is tasked with providing support to investors and creating a more favourable investment climate. Although Tajikistan lacks a formal FDI strategy, ICT, hydropower and agriculture are among its priority investment areas. Turkmenistan also lacks an IPA but is increasingly open to FDI. As a result, FDI in the country rose from USD 130 million in 2000 to over USD 3 billion in 2011. Agriculture, communications and power are listed among its priority areas for investment. Uzbekistan created UZINFO INVEST, its IPA, in 2006. Except for a few key areas, it imposes no limits on foreign investor participation. Agriculture is one of Uzbekistan's investment priority areas. All five countries continue to restrict foreign ownership of land.

In 2008, the OECD launched the Central Asian Competitiveness Initiative. Its objective is to help the participating countries – Afghanistan, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, Turkmenistan, and Uzbekistan – “create a sound business climate for investment, enhance productivity, support entrepreneurship, develop the private sector, and build knowledge-based economies to render this region more competitive and attractive to foreign investment⁷⁹.” The programme's specific target areas are policy development and implementation, the private sector and SMEs, economic stability and development, and regional integration. This timely intervention should help further improve the investment climate in this increasingly important region.

⁷⁸ UNCTAD, p. 18-19.

⁷⁹ OECD (n.d.) *Central Asia Competitiveness Initiative*. [Available at] <https://www.oecd.org/globalrelations/centralasiacompetitivenessinitiative.htm>

About the ECFA

Central Asia is a region larger than Western Europe and contains five countries: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. Blessed with some of the richest and most diverse resources anywhere in the world, over the last twenty years the region has shown its commitment to become a reliable, long-term partner of Europe.

Kazakhstan is Central Asia's engine for economic growth, and the Government of Kazakhstan has taken the lead in developing relations with the countries of Europe. In its commitment to the process of deepening political and economic relations with Europe, Kazakhstan has participated in the establishment of the **Eurasian Council on Foreign Affairs** (ECFA). The first Honorary President of the Eurasian Council on Foreign Affairs is H.E. Erlan Idrissov, Foreign Minister of the Republic of Kazakhstan.

The Eurasian Council on Foreign Affairs aims to establish a reputation as a valuable and independent source of high-quality research, publications and information that will keep European countries fully abreast of the fast-changing development of the Central Asian region.

The grant for the establishment costs of the ECFA has been provided by the Ministry of Foreign Affairs of the Republic of Kazakhstan. The ECFA and its staff are grateful for this generous donation and thank the Kazakhstan MFA. It is envisaged that, as with similar institutions in other countries, governments in the region as well as corporate sponsors and private individuals will over the longer-term join the funding base of the ECFA.

A list of upcoming publications can be found [here](#). You can [subscribe here](#) to receive all news updates as well as the ECFA's regular newsletters and bulletins.

Important Disclaimer: Please note that the views expressed in our Occasional Papers series do not represent the views of its Honorary President H.E. Erlan Idrissov, Minister of Foreign Affairs of the Republic of Kazakhstan, or the views of any of the members of the Advisory Council of the ECFA. The purpose of the Papers is to encourage debate and discussion on the important developments occurring in Central Asia.